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SORGHUM SHOOT FLY: A KEY PEST OF SORGHUM

Lekhraj Yadav¹, Sanwar Mal Yadav² and Vinod Kumar Yadav²

¹Department of Entomology & ²Department of Soil Science and
Agricultural Chemistry

Sam Higginbottom University of Agriculture, Technology and Sciences
Prayagraj -211007, U.P., India

Author's email ID- yadavlekhraj96@gmail.com

Sorghum shoot fly, *Atherigona soccata*, is a species of fly in the family Muscidae order Diptera, whose larvae feed on the central growing shoots of millet crops like sorghum and finger millet, as well as maize, where they can cause serious loss of yield across Africa and Asia including India. Sorghum (*Sorghum bicolor* L.) is an important cereal crop of the world. This crop is vulnerable to over 150 insect species from sowing to final harvest. Among the insect pests, the shoot fly (*Atherigona soccata*) is one of the most important and destructive pest which causes considerable losses in fodder as well as grain yield.

Scientific Name: *Atherigona soccata* (Muscidae : Diptera)

Host plants : Millet crops

Major host - sorghum

Alternative host – Rice, Pearl millet, Maize and Millets

Identification of the pest:

Egg - Egg are white in colour. Eggs are laid on the underside of leaves 7-8 days of seedlings or on young tillers. One to three eggs are laid per leaves.

Larva (Maggot) – The young larva crawls down inside the sheath base of young shoot. Kill the growing point and youngest leaves.

Pupa – Pupa usually take place in the base of dead shoot, but some times in the soil. The pupal period take place about 7 days.

Adults – Adults fly is about 4mm long. It looks like a small house fly. Head and thorax of the female are pale grey. The male is more blackish.

Favorable Conditions -

The late sown crops generally suffer greater shoot fly damage because of high humidity and moderate temperature. Infestation is normally high in the post rainy season crop, which is sown in September- October temperature above 35°C and below 18°C reduces shoot fly survival.

Symptom of damage

- The maggot bores inside the stem and cuts the growing point. Central shoots dried and produce “dead heart” symptom. The infested plant produces side tillers. Damage by at the seedling stage (5 to 30 days after seedling emergence) will lead to the typical dead heart symptoms.
- The larva migrates to the upper side of the leaf, and moves along the leaf whorl until it reaches the growing point where the larvae cut the growing point. As a result the central leaf dries up forming a dead heart, which can be pulled out easily and produces a rotting smell.
- Normally the damage occurs 1 to 4 weeks after seedling emergence. Seedlings of 5 to 30 days old are generally susceptible to shoot fly damage.
- Older plants (>30 days after seedling emergence) are not usually damaged by *A. soccata* however, under conditions of high humidity during the rainy season, infestation may occur. Under these conditions the infested plants do not produce the typical dead heart symptoms. In this instance, the damaged leaf becomes thin and papery, wrapping around the other leaves. The plants may fail to grow normally.
- Late infestations may also damage the panicle in the formative stage, resulting in rotting or drying up of a portion of the panicle affected by shoot fly damage.



Management -

- **ETL:** 1 egg/plant in 10% of plants in the first two weeks of sowing or 10% dead hearts
- Take up early sowing of sorghum immediately after the receipt of South West or North East monsoon to minimise the shoot fly incidence.
- Use seeds pelleted with insecticides
- Seed treatment with imidacloprid 70 WS @ 10 g/kg of seeds
- In case of direct seeding, use increased seed rate upto 12.5 kg/per hectare and remove the shoot fly damaged seedlings at the time of thinning or raise nursery and transplant only healthy seedlings.
- Plough soon after harvest, remove and destroy the stubbles.
- Set up the fish meal trap @ 12/ha till the crop is 30 days old.
Use of natural enemies of shootfly like
- Parasitoids: *Trichogrammatoidea simmonalsi*, *Trichogramma chilonis*, *Neotrichoporoides nyemitawus*
- Predators: Spiders, Coccinellids, lace wings etc.
Spray one of the following for an area of 120 m² nursery :
- Dimethoate 30 EC 1.0 ml/ha
In main field for direct sown crop spray any one of the following
- Methyl demeton 25 EC 500 ml/ha
- Dimethoate 30 EC 500 ml/ha
- Neem Seed Kernel extract 5%
